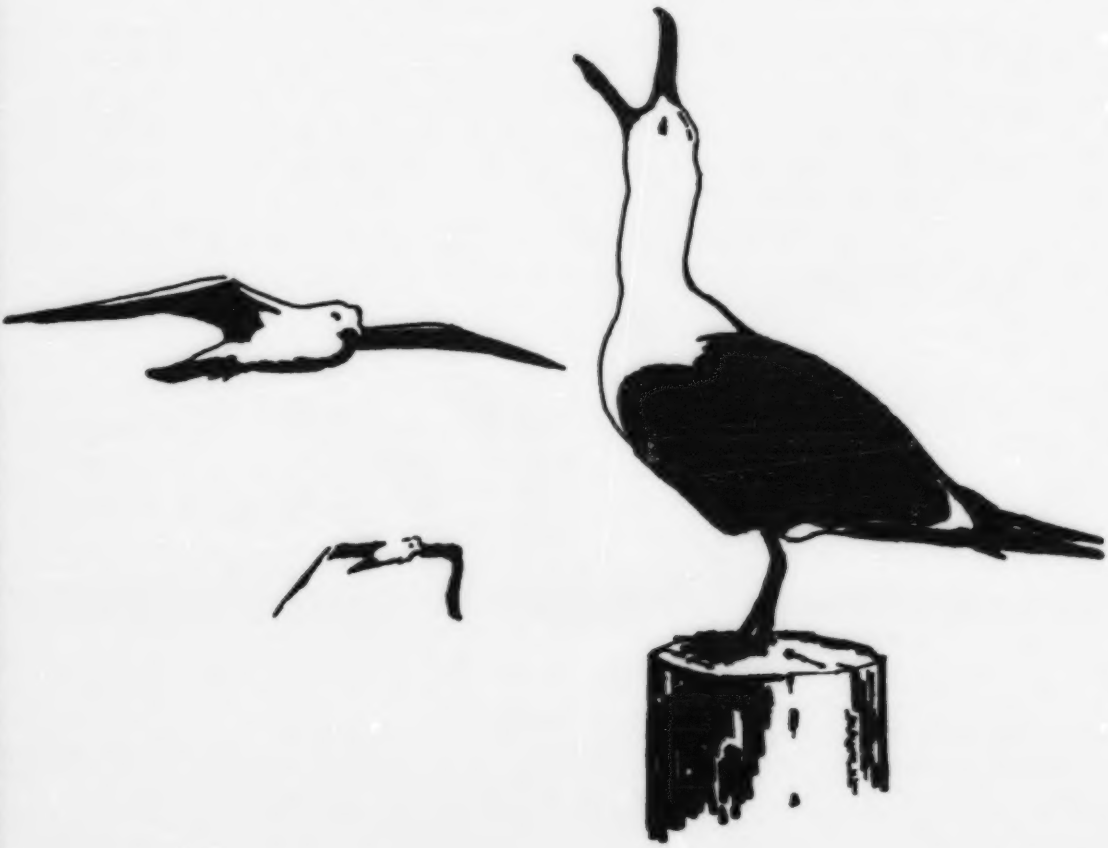
INTERNATIONAL COUNCIL FOR BIRD PRESERVATION

Seabird Specialist Group's Pre-Conference Workshop

SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS

University of Waikato Conference Centre
Hamilton, New Zealand, 19-20 November 1990

PROGRAM & ABSTRACTS



CANADIAN WILDLIFE SERVICE —
ATLANTIC REGION

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION

WORLD CONFERENCE - SEABIRD WORKSHOP

University of Waikato Conference Centre
Hamilton, New Zealand, 19-20 November 1990

Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS" *

J. Burger, M. Gochfeld & D.N. Nettleship

Conveners and Co-editors

Program Coordinator:

D.N. Nettleship
Canadian Wildlife Service
Bedford Institute of Oceanography
P.O. Box 1006, Dartmouth, N.S., Canada B2Y 4A2
[phone: 902-426-3274; fax: 902-426-7827]

* Proceedings to be published as:

"Seabirds on Islands: Threats, Case Studies & Action Plans"
International Council for Bird Preservation Technical Publication
Cambridge, England, U.K. (1992)
(Edited by D.N. Nettleship, J. Burger & M. Gochfeld)

November 1990

91-05899/

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
XXth WORLD CONFERENCE

Hamilton, New Zealand
19-27 November 1990

Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

MAJOR WORKSHOP SPONSORS

International Council for Bird Preservation
Cambridge CB3 OPJ, England, U.K.

International Ornithological Congress
Christchurch, New Zealand

Man and Biosphere
United Nations Educational, Scientific & Cultural Organization
(Division of Ecological Sciences) 75015 Paris, France

Wild Bird Society of Japan
Tokyo 150, Japan

International Association for Ecology
Athens, Georgia, U.S.A.

Seatuk Foundation
Islip, New York, U.S.A.

Canadian Wildlife Service, Conservation and Protection
Environment Canada, Dartmouth, Nova Scotia, Canada

INTRODUCTION

D.N. Nettleship

This pre-conference workshop "Seabirds on Islands" by the Seabird Specialist Group (SSG) of the International Council for Bird Preservation (ICBP) was organised to focus attention on the conservation and protection of seabirds on islands and their colonies. The topic was identified at the 1986 SSG meeting in Kingston, Ontario, Canada, and later expanded and developed through numerous discussions between 1987-88 including formative ones with the ICBP Directorate in Cambridge, England, in February 1988. The objectives of the Workshop evolved from those meetings and were defined as follows:

1. To identify and review factors influencing future prospects of seabirds worldwide: pollution, commercial fisheries, predation and human disturbance.

2. To identify site-specific problems requiring immediate attention (those locations where species are most at risk), and other cases that display combinations of the major categories of threats and can be easily generalized to situations elsewhere.

3. To move the findings of research to the development of management plans that can be implemented to mitigate or correct immediate impacts on populations of seabirds, and by doing so provide models for the formulation of conservation strategies at other locations both now and in the future.

The structure of the Workshop is straightforward. Part I "Threats to Seabirds" covers the principal threats common to populations of seabirds throughout the world. Those problem areas are reviewed with key factors of concern highlighted. The remainder of the Workshop examines, in detail, sixteen case studies (CS) that range from critical conservation issues requiring immediate action to those where conservation efforts are advanced and some degree of improvement already attained. Part II "Major Seabird Conservation Problems" comprises 11 case studies, all reporting serious conservation issues. The studies reviewed in Part III "Action Plans, Progress, and Solutions" provide lessons in the development of management plans, and the degree of success that can be expected through various approaches to specific problems, information that can be applied elsewhere.

In summary, our intention is to achieve a case study mix of developed and developing countries, of offshore and oceanic islands, and of vulnerable situations and examples of successful and unsuccessful ventures. Each of these should provide information that can be generalized to other problem areas and nations, and over the longer term contribute to the conservation and survival of threatened seabird species and the aquatic and terrestrial systems that support them.

CONTRIBUTORS' NAMES AND ADDRESSES

ANDERSON, D.W. Dr. Wildlife & Fisheries Biology, University of California, Davis, CA 95616, U.S.A.
ASHMOLE, N.P. Dr. Biological Sciences, Edinburgh University, Edinburgh EH9 3JT, Scotland, U.K.
ASHMOLE, M.J. Biological Sciences, Edinburgh University, Edinburgh EH9 3JT, Scotland, U.K.
BAKKEN, V. Norwegian Polar Research Institute, P.O. Box 158, 1330 Oslo lufthavn, Norway
BELL, B.D. 9 Ferry Street, Wellington 3, New Zealand
BISCOITA, M.J. Museu Municipal do Funchal, 9000 Funchal, Madeira
BLANCHARD, K. Quebec-Labrador Foundation, Atlantic Centre for the Environment, 39 South Main Street, Ipswich, Massachusetts 01938, U.S.A.
BURGER, J. Dr. Biological Sciences, Rutgers University, Piscataway, N.J. 08855, U.S.A.
CEPEDA, L.F. Dr. Servicio Parque Nacional Galapagos, Isla Santa Cruz, Galapagos, Ecuador
CROXALL, J.P. Dr. British Antarctic Survey, High Cross, Madingly Road, Cambridge CB3 OET, England, U.K.
CRUZ, J.B. School of Forestry & Environmental Studies, Duke University, Durham, NC 27706, U.S.A.
DIAMOND, A.W. Dr. Canadian Wildlife Service, 115 Perimeter Road, Saskatoon, Saskatchewan, Canada S7N OX4
DUFFY, D.C. Dr. Seatuck Foundation, Box 31, Islip, N.Y. 11751, U.S.A.
EVANS, P.G.H. Dr. c/o Zoology Department, Oxford University, Oxford OX1 3PS, England, U.K.
GOCHFELD, M. Dr. Environmental & Community Medicine, UMDNJ-Robert Wood Johnson Medical School, Piscataway, N.J. 08854, U.S.A.
HALEWYN, R. van Dr. Zoology Museum, Plompetorengracht 9, 3512 CA Utrecht, The Netherlands
HAYNES-SUTTON, A. Marshall's Pen, P.O. Box 58, Mandeville, Jamaica, West Indies
HAZEVOET, K. Dr. Institute of Taxonomic Zoology, P.O. Box 4766, 1009 AT Amsterdam, The Netherlands
HSU, W. Prof. Department of Ecology, Peking Natural History Museum, 126 Tien Chiao Street 100050, Beijing, People's Republic of China
JOUVENTIN, P. Dr. Centre d'Etudes Biologiques des Animaux Sauvages, Centre National de la Researche Scientifique, 79360, Beauvoir/Niort, France
KAMPP, K. Dr. c/o Zoological Museum, Universitetsparken 15, DK-2100 Copenhagen O, Denmark
KORTE, K. de Dr. Institute of Taxonomic Zoology, P.O. Box 4766, 1009 AT Amsterdam, The Netherlands
MAJLUF, P. Departamento de Biologia, Universidad Cayetano heredia, Apartado 5045, Lima 100, Peru
MEHLUM, F. Dr. Norwegian Polar Research Institute, P.O. Box 158, 1330 Oslo lufthavn, Norway

NETTLESHIP, D.N. Dr. Canadian Wildlife Service, Bedford Institute of Oceanography, P.O. Box 1006, Dartmouth, Nova Scotia, Canada B2Y 4A2
NISBET, I.C.T. Dr. I.C.T. Nisbet & Co., 72 Codman Road, Lincoln, MA 01773, U.S.A.
REVILLE, B. Dr. Australian National Parks & Wildlife Service, GPO Box 636, Canberra, ACT 2600, Australia
ROBERTSON, C.J.R. Science & Research Division, Department of Conservation, P.O. Box 10420, Wellington, New Zealand
SALVIA, J. U.S. Fish & Wildlife Service, Boqueron, Puerto Rico
SCHNEIDER, D.C. Dr. Ocean Sciences Centre, Memorial University of Newfoundland, St. John's, Newfoundland, Canada A1B 3X7
SILVIUS, M.J. Asian Wetland Bureau-Indonesia, P.O. Box 254/BOO, Bogor 16001, Indonesia
SIMMONS, K.E.L. Dr. c/o Dept. Psychology, Leicester University, Leicester LE1 7RH, England, U.K.
STOKES, T. Dr. Australian National Parks & Wildlife Service, GPO Box 636, Canberra, ACT 2600, Australia
VELARDE, E. Dr. Instituto de Biologia, University Nacional Autonoma de Mexico, A.P. 70-153, 04510 Mexico, D.F.
ZINO, F.J.A. Dr. Rua do Dr. Pita 7, 9000 Funchal, Madeira

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
University of Waikato Conference Centre
Hamilton, New Zealand, 19-20 November 1990

Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

J. Burger, M. Gochfeld & D.N. Nettleship
Conveners and Co-editors

D.N. Nettleship
Program Coordinator

D.C. Duffy
Chairman, Seabird Specialist Group

18 Nov. Arrival of workshop participants.
Evening: informal meetings of participants/authors.

DAY 1 (19 Nov.): THREATS TO SEABIRDS & CASE STUDIES

0830	Welcome	D.C. Duffy (Chairman SSG)
	Opening Remarks & Charge	C. Imboden (Director General ICBP)
	Introduction	D.N. Nettleship

PART I: THREATS TO SEABIRDS [0845-1100h]

1.	Pollution and marine birds	I.C.T. Nisbet
2.	Seabird-fisheries interactions	D.C. Duffy & D.C. Schneider
3.	Human disturbance & predation	J. Burger & M. Gochfeld
	Concluding Remarks	D.N. Nettleship

PART II: MAJOR SEABIRD CONSERVATION PROBLEMS

Session 1: 1115-1215h

	Introduction	J. Burger
4.	Guano Islands of Peru	D.C. Duffy & P. Majluf
5.	Indonesian Islands	K. de Korte & M.J. Silvius

Session 2: 1330-1800h

6.	Ascension Island (S. Atlantic)	N.P. Ashmole, M.J. Ashmole, & K.E.L. Simmons
7.	Amsterdam Island (Indian Ocean)	P. Jouventin
8.	Greenland	K. Kampp, D.N. Nettleship, & P.G.H. Evans
9.	Svalbard (Spitsbergen & Bjornoya)	F. Mehlum & V. Bakken
10.	Madeira Archipelago (NE Atlantic)	F. Zino & M. Biscoita

Session 2: (Cont'd)

11.	West Indian Islands	J. Burger, M. Gochfeld, R. van Halewyn, A. Haynes-Sutton, & J. Saliva
12.	Xisha Archipelago (S. China Sea)	W. Hsu

Evening: Case Study Working Groups

DAY 2 (20 Nov.): THREATS TO SEABIRDS & CASE STUDIES

PART II: MAJOR SEABIRD CONSERVATION PROBLEMS (Cont'd)

Session 3: 0800-0900h

13.	Gulf of California	E. Velarde & D.W. Anderson
14.	Chatham Islands (New Zealand)	B.D. Bell & C.J.R. Robertson
	Concluding Remarks	D.N. Nettleship

PART III: ACTION PLANS, PROGRESS & SOLUTIONS [0900-1230h]

	Introduction	J. Burger
15.	Christmas I. (Indian Ocean)	B.J. Reville & T. Stokes
16.	Seychelles (W. Indian Ocean)	A.W. Diamond
17.	Galapagos Islands	L.F. Cepeda & J.B. de Cruz
18.	Cape Verde Islands, N.W. Africa	K. Hazevoet
19.	Culture & Seabird Conservation	K. Blanchard
20.	Conclusions & Actions	J.P. Croxall
	Open Discussion	
	Adjournment	

PART IV: SSG BUSINESS MEETING [1400-1730h]

1400	Introduction	D.C. Duffy
1410	Seabird Problems: Continuing	
1500	Seabird Problems: New	
1530	SSG Priorities	
1600	Planning Committee Report	
1630	Discussion, Resolutions & Action Plans	
1730	Adjournment of SSG Workshop	

1830 ... SSG Dinner ...

Evening: social activities

CONTENTS

	Page
ICBP SSG's Pre-Conference Workshop	i
Major Workshop Sponsors	iii
INTRODUCTION	v
Contributors' names and addresses	vi
Program Agenda	viii
PART I: THREATS TO SEABIRDS	1
1. Effects of pollution on marine birds I.C.T. Nisbet	2
2. Seabird-fisheries interactions D.C. Duffy & D.C. Schneider	4
3. Human disturbance and predation J. Burger & M. Gochfeld	6
PART II: MAJOR SEABIRD PROBLEMS	9
4. The guano islands of Peru - the once and future management of a renewable resource D.C. Duffy & P. Majluf	10
5. Pelecaniformes on Indonesian Islands - status and recent changes K. de Korte & M.J. Silvius	12
6. Seabird conservation and feral cats on Ascension Island, South Atlantic N.P. Ashmole, M.J. Ashmole & K.E.L. Simmons	14
7. Past, present, future of Amsterdam Island, Indian Ocean P. Jouventin	16
8. Thick-billed Murres of Greenland K. Kampp, D.N. Nettleship & P.G.H. Evans	18
9. Seabirds in Svalbard: status, recent changes and management F. Mehlum & V. Bakken	20
10. Breeding seabirds in the Madeira Archipelago F.J.A. Zino & M.J. Biscoito	22
11. Seabirds in the West Indies: threats and protection needs J. Burger, M. Gochfeld, R. van Halewyn, A. Haynes-Sutton & J. Salvia	24
12. Seabirds of the Xisha Archipelago: status and conservation measures W. Hsu	26

Page

13. Seabirds of the Chatham Islands: status, recent changes, and management — 28
B.D. Bell & C.J.R. Robertson
14. Conservation and management of seabird islands in the Gulf of California - setbacks and successes — 30
E. Velarde & D.W. Anderson

PART III: ACTION PLANS, PROGRESS & SOLUTIONS — 33

15. The conservation of seabirds on Christmas Island, Indian Ocean — 34
B.J. Reville & T. Stokes
16. Seabird conservation on the Seychelles, Indian Ocean — 36
A.W. Diamond
17. Status and management of seabirds on the Galapagos Islands — 38
F. Cepeda & J.B. Cruz
18. Status and conservation of seabirds in the Cape Verde Islands, West Africa — 40
C.J. Hazevoet
19. Culture and seabird conservation: the North Shore of the Gulf of St. Lawrence, Canada — 42
K.A. Blanchard
20. Seabirds on islands: conclusions and actions — 44
J.P. Croxall

NOTES — 47

PART I

THREATS TO SEABIRDS

1. Pollution
2. Commercial Fisheries
3. Predation & Human Disturbance

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Threat: **EFFECTS OF POLLUTION ON MARINE BIRDS**

Author/Address: I.C.T. NISBET. I.C.T. Nisbet and Company, 72 Codman Road, Lincoln, MA 01773, U.S.A.

Effects of pollution on marine birds have been studied in several ways: observational surveys of spills and other incidents; local or regional studies of polluted areas; focused investigation of colonies or local populations showing adverse effects; and experimental studies of wild or captive birds. Available information is patchy and uneven. Most reports of effects are from a limited number of polluted areas in developed countries.

Effects of floating oil include: massive local mortality resulting from large spills or blowouts; chronic losses to local populations resulting from recurrent discharges; hemolytic anemia and other sublethal effects of ingested oil; and impaired growth of nestlings. Plastic particles and artifacts may kill birds by entanglement; they accumulate in the digestive tracts of seabirds, even in remote areas. Effects are difficult to document, but may be substantial in some areas and for some species. Chlorinated hydrocarbons have been implicated in a number of cases of local mortality (primarily due to cyclodienes) and reproductive failure (primarily due to DDE). The largest reported effects were caused by industrial discharge into shallow coastal waters, rather than by agricultural runoff or other sources of wide-scale pollution. Metals often accumulate to high concentrations in tissues of seabirds, but these concentrations rarely exceed the ranges reported in seabirds from relatively unpolluted areas. Natural levels of metals in marine food-webs may cause physiological or toxic stresses on seabirds, but additional effects of anthropogenic sources have not been demonstrated. Effects of other pollutants have not been reported convincingly. Postulated effects of pollutants on food supply or other indirect effects remain undocumented.

Although many effects of pollution on marine birds have been reported, their population consequences are usually difficult to assess in the variable marine environment. Overall, effects have been most conspicuous (and probably most severe) in shallow coastal waters, especially those with restricted circulation such as the Waddensee or the Southern California Bight. Important population effects may occur where local endemics occur in polluted inshore waters. There is an urgent need for more investigation of such areas in developing countries. To date, there is little evidence of substantial effects of pollution on oceanic birds, although chronic effects of oil, plastics and organochlorines may be occurring in some areas.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Threat: **SEABIRD-FISHERIES INTERACTIONS: A MANAGER'S GUIDE**

Authors/Addresses: **D.C. DUFFY, and D.C. SCHNEIDER.** Seatuck Foundation, Box 31, Islip, N.Y. 11751, U.S.A.; Ocean Sciences Centre, Memorial University of Newfoundland, St. John's, Newfoundland, Canada A1B 3X7

Fishing activities by humans can affect seabirds either directly, through death and drowning, or indirectly, through effects on prey of marine birds. Interactions are diverse, with outcomes that range from beneficial to detrimental for birds. Outcomes for humans are similarly diverse. Three different ratios have been developed to diagnose the potential for interaction. The Horn ratio (dietary overlap), Evans ratio (prey mortality due to birds, relative to stock size), and Wiens ratio (prey consumption relative to production) indicate the potential effect of birds on commercially important fish species. The Schaefer ratio (catch by birds relative to catch by fisheries) and the Bourne ratio (avian consumption relative to lateral resupply) can also be used to diagnose the potental effect of fisheries on seabirds.

Decision making about the conservation of seabirds necessarily occurs in an economic and political context; decisions typically must be made where uncertainty is high due to limited information. We list the consequences of "Type I" uncertainty (believing that interaction occurs when none occurs) and "Type II" uncertainty (believing no interaction occurs when it does). Many interactions detrimental to seabirds are incidental rather than directed at birds; this suggests that enlisting fishermen as allies can be an effective alternative to regulatory steps.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Threat: **HUMAN DISTURBANCE AND PREDATION**

Authors/Addresses: J. BURGER and M. GOCHFELD. Biological Sciences, Rutgers University, Piscataway, NJ 08855, U.S.A.; Environmental and Community Medicine, UMDNJ-Robert Wood Johnson Medical School, Piscataway, N. J. 08854, U.S.A.

Among the adversities facing breeding seabirds, the threat of direct and indirect human disturbance and predation are virtually universal. Direct human disturbance takes the form of physical intrusion into breeding colonies or close to breeding colonies, sufficient to disrupt courtship, nesting, and parental behaviour. Direct disturbance also takes the form of deliberate exploitation of eggs, young, or adult birds for food or feathers. Indirect disturbance includes destruction of breeding habitat through development or disruption of feeding or nesting habitat through pollution by petroleum, chemicals, or artifacts. In many cases the financial impetus for land development, particularly on tropical islands, seems to be inexorable. Yet a combination of education, economic incentives, and world opinion may lead to the preservation of critical seabird habitat, even in conjunction with development.

Seabirds have had to contend with predation throughout their evolutionary histories, and indeed their use of remote islands is partially a response to predation pressure. Many seabird colonies are on inaccessible cliffs or in trees, where predation is prevented for at least part of the breeding cycle. Under natural conditions seabird populations are probably in balance with predator populations, but human intervention may shift the balance in favour of expanding predator populations (e.g., garbage dumps and gulls). More important, are the human commensals (e.g., rats, cats, dogs, pigs, monkeys) which have been introduced by humans onto many islands with devastating impact. Additionally, ungulates and rabbits have been introduced on many islands and have eliminated natural vegetation. Aggressive control of introduced predators is often essential. Even natural predator populations may require control, when they have been artificially altered by human activities.

NOTES

PART II

MAJOR SEABIRD PROBLEMS

4. Guano Islands of Peru
5. Indonesian Islands
6. Ascension Island (S. Atlantic)
7. Amsterdam Island (Indian Ocean)
8. Greenland
9. Svalbard (Spitsbergen & Bjornoya)
10. Madeira Archipelago (NE Atlantic)
11. West Indian Islands
12. Xisha Archipelago (S. China Sea)
13. Gulf of California
14. Chatham Islands (New Zealand)

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **THE GUANO ISLANDS OF PERU-THE ONCE AND FUTURE MANAGEMENT OF A RENEWABLE RESOURCE**

Authors/Addresses: D.C. DUFFY and P. MAJLUF. Seatuck Foundation, Box 31, Islip, N.Y. 11751, U.S.A.; Departamento de Biologia, Universidad Cayetano heredia, Apartado 5045, Lima 100, Peru

---

The Peruvian guano coastal islands and headlands have been among the best and worst managed of seabird nesting areas. The islands contained enormous deposits of seabird excreta or guano which were mined for fertilizer in the 19th Century by European and North American interests who killed many of the birds. In the early 1900's, with guano deposits exhausted and bird populations almost exterminated, the Peruvian government nationalized the islands and began to manage them as a sustainable resource, by protecting the birds, improving their nesting sites, and taking only the annual accumulations of guano.

Populations of the 3 principal guano-producing species, the Guanay Cormorant Phalacrocorax bougainvilli, Peruvian Booby Sula variegata and Peruvian Brown Pelican Pelecanus occidentalis thagus recovered sufficiently so that their colonies became space-limited. The Peruvians responded by fencing coastal headlands with predator-proof walls and the guano bird population increased ever further. In the 1960's, a commercial fishmeal industry developed for the anchoveta Engraulis ringens, the main food of the seabirds, leading to competition between the guano industry and the fishery. Guano harvests fell to low levels. By 1972, the fishery had a vast excess, over capacity of boats and fishmeal plants, and began to collapse because of low returns on investment. The collapse was accelerated by continued overfishing during the 1972 El Nino, an oceanographic anomaly linked to reproductive failure of the anchoveta. Anchoveta populations remained low for a decade and the remaining fishery switched to sardina Sardinops ocellata, a slightly larger fish that could be canned. Fishing pressure continued on the anchovy, supposedly to keep it from recovering and outcompeting the sardina, but in reality because fishmeal could be sold for hard currency on the international market, whereas sardina was sold domestically. Following the collapse of the anchovy stock, seabird numbers only partially recovered and the guano industry abandoned many islands and headlands. Money for management sharply decreased as the government has struggled to pay for Peru's international debt and for a protracted conflict with two guerrilla movements. Hyperinflation has further eroded the government's ability to manage its natural resources.

The situation is extremely unpromising, but there are three elements that provide hope. First, guano is the ideal organic fertilizer and could be sold overseas for hard currency to the large and growing organic farming movement, as is being done with Namibian guano. Second, private and local efforts, such as those working to preserve Punta San Juan, a major penguin nesting area in southern Peru, may provide a model for non-governmental management and protection of nesting areas. Finally, if Peru can overcome its political and security problems, it would be a major destination for the nature tourism industry, as it combines whale and seabird watching with archeological ruins, indigenous peoples and magnificent scenery in the Andes and Amazon. The guano islands, only one of which is presently visited by a tourist boat, would be an important component of such tourism.

In the meantime, Peruvian scientists and conservationists urgently need logistical help from overseas, both to prevent a brain drain from Peru and to allow them to function effectively in playing an increased role in the management of Peruvian natural resources.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **PELECANIFORMES ON INDONESIAN ISLANDS - STATUS AND RECENT CHANGES**

Authors/Addresses: **J. de KORTE and M.J. SILVIUS.** Institute of Taxonomic Zoology, P.O. Box 4766, 1009 AT Amsterdam, The Netherlands; Asian Wetland Bureau-Indonesia, P.O. Box 254/BOO, Bogor 16001, Indonesia

---

In Southeast Asia, only eastern Indonesia still has sizeable colonies of Pelecaniformes. In Malaysia and Western Indonesia all large colonies disappeared in the first half of this century. Recent surveys in eastern Indonesia revealed that seabirds are rapidly declining there too, and if no conservation action is initiated, these colonies will disappear within a few decades. This pertains also to the disappearance of complete small island habitats with great biodiversity, including original vegetation, terrestrial island birds, sea turtle nesting places, surrounding coral reefs and dugong areas.

The sea-faring people of eastern Indonesia use all the resources of the sea. An island provides shelter for boats. The first phase in exploitation is fishing near the island, including drying of fish on land. Next comes semi-permanent habitation by people, often resulting in the establishment of permanent settlements where fresh water can be obtained. In all phases of island exploitation, occupied or not, the original trees are cut for lumber: the island is then developed for agriculture, mostly coconuts. If breeding seabirds occur, their eggs and young are collected systematically. Compared with the numbers of tern eggs taken and their importance to the local economy, the harvest of Pelecaniformes is insignificant. But the disturbance effect on the birds themselves is catastrophic. A serious threat also exists from a recent proposal to exploit phosphate deposits on islands with seabird colonies. And finally, rats have been introduced to all vegetated coral and most volcanic islands; that has decimated many populations of the smaller seabird species.

The loss of these small island ecosystems will be tragic. It will mean the loss of one of Indonesia's greatest natural treasures, the loss of birds as indicators for the local fisherman in locating fish, and the loss of a great attraction for ecotourism. Nature conservation organizations seek to safeguard Pelecaniformes colonies by: (1) supplying information to local people and relevant policymakers about islands with seabird colonies, (2) increasing public awareness of the economic and conservation value of seabird colonies, (3) developing a strategy to integrate seabird island conservation with tourism development as a tool for conservation, (4) developing employment alternatives for fishermen within conservation initiatives, (5) training of nature conservation officers in the management of seabird islands, and (6) supervising sound nature tourism. The islands have to be viewed as complete interacting terrestrial and marine ecosystems. They need protection, but at the same time, require a controlled visitation by nature tourists to generate a source of local and national income, part of which will be used to support conservation action.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **SEABIRD CONSERVATION AND FERAL CATS ON ASCENSION ISLAND, SOUTH ATLANTIC**

Authors/Addresses: **N.P. ASHMOLE, N.P., M.J. ASHMOLE and K.E.L. SIMMONS.**
Division of Biological Sciences, Edinburgh University, Edinburgh EH9 3JT, Scotland, U.K.; c/o Department of Psychology, Leicester University, Leicester LE1 7RH, England, U.K.

Ascension, an isolated island in the tropical South Atlantic, is one of the most important warm water seabird stations in the world, with a rich community comprising four species of terns, three boobies, two tropicbirds, a storm-petrel and the endemic Ascension Frigatebird. The birds of Ascension declined catastropically as a result of predation by humans, introduced rats *Rattus rattus* and especially feral cats. Only one seabird (Audubon's Shearwater) has probably been lost as a breeding species, but most of the others are now restricted to a small island (Boatswainbird Islet) and also (in some cases) mainland cliffs or stacks close to the shore. The Red-footed Booby population is endangered, with probably less than 30 individuals surviving. Competition for nest sites safe from predators lowers breeding success and limits breeding population size of some species.

The Sooty Tern, famous at this station for its synchronized but less than annual breeding cycle, survives on the main island, probably because all individuals remain at sea when not breeding. However, the recently estimated breeding population of 350,000 birds still suffers serious predation by cats. Several other species frequently attempt to breed on the main island, but are caused to desert or are killed by cats.

A proposal is made for eradication of feral cats from Ascension Island, so as to safeguard the Sooty Terns and to permit recolonization of the main island by other species. Alternative conservation options are evaluated, but are considered less attractive. Evidence from elsewhere suggests that cat eradication should be feasible, and that continued presence of rats would not neutralize the expected benefits. The eradication campaign should be carried out by a specialist team from outside. Before the project itself can be attempted, legal and practical arrangements must be made to ensure that all domestic cats on the island are neutered. Although all island residents are contract workers, this requirement presents human problems that will not be easy to overcome.

It is suggested that ICBP should formally endorse the proposal to eradicate the introduced cats of Ascension Island. Successful completion of the project would go some way towards restoring the natural seabird communities of the equatorial Atlantic Ocean, and would provide a prime example of the potential for positive conservation measures to redress ecological disasters caused by human activities.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **PAST, PRESENT AND FUTURE OF AMSTERDAM ISLAND, INDIAN OCEAN**

Authors/Addresses: **P. JOUVENTIN.** Centre d'Etudes Biologiques des Animaux Sauvages, Centre National de la Recherche Scientifique, 79360, Beauvoir/Niort, France

---

Amsterdam Island is the most damaged island of the groups of French southern islands in the Indian Ocean. A forest originally occupied 27% of the island, but covered only 5% of the area as early as 1875. Other types of vegetation are also disappearing due to erosion over most of the island. Bird habitat has been degraded by a combination of several fires and the expansion of a feral cattle population introduced in 1871.

The introduction of brown rats, cats, pigs has played a major part in depleting the local seabird populations. Cats that were introduced here, at least 50 years ago, now eat less than 3% birds and about 85% rodents in areas where birds have virtually disappeared; but birds still represent 36% of the diet of cats in areas where they are present. A preliminary analysis of subfossil bones shows that the avifauna of Amsterdam Island comprised 22 species. Only 9 species of birds breed there today, of which four are extremely rare, including about 15 breeding pairs of the endemic Amsterdam Albatross. Among the species which have disappeared, four were probably endemic and remain undescribed: a flightless duck, a storm-petrel and probably two species of the genus Pterodroma and Procellaria.

Considering the difference between the past and present breeding distribution of the Amsterdam avifauna and the recent colonization of the plateau by cattle, it was imperative to control the size of the population to halt the degradation of the vegetation, particularly the draining of peat bogs on the high plateau. A fence dividing the island into two parts was constructed in 1987. In the rehabilitated half, the cattle have been eradicated (1059 individuals).

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **THICK-BILLED MURRES OF GREENLAND: STATUS AND PROSPECTS**

Authors/Addresses: **K. KAMPP, D.W. NETTLESHIP, and P.G.H. EVANS.** Zoological Museum, Universitetsparken 15, DK-2100 Copenhagen O, Denmark; ; Canadian Wildlife Service, Bedford Institute of Oceanography, Box 1006, Dartmouth, N.S., Canada B2Y 4A2; Zoology Deptartment, Oxford University, Oxford OX1 3PS England, U.K.

Reports of alarming population declines of Thick-billed Murres *Uria lomvia* in Greenland prompted detailed surveys to be conducted through the 1980s to determine colony distributions, numbers of breeding birds, and factors of mortality including the summer/winter murre hunt and incidental drowning in fish-nets. The results of this review are presented outlining changes in population levels, as can be determined from published and unpublished records, through this century.

Assessment of changes in abundance are hampered by the paucity of information from earlier times and the qualitative nature of those data that do exist. But severe population declines (80-90% or more) are known to have occurred in northern West Greenland (from Disko Bay to Upernavik), with most of the major colonies in southern West Greenland (Maniitsoq district) extirpated or reduced to very low levels by the early 1900s. The northernmost colonies in Upernavik and Thule districts appear relatively unchanged, now comprising more than 50% of the entire Greenland population of murres.

Causes of the dramatic decline of murres, past and present, are related to human-induced mortality. Hunting at the colonies through the breeding season and winter hunting in southern West Greenland and Newfoundland-Labrador remove enormous numbers of birds each year, as has net-mortality in fishing gear. One-quarter to 0.5 million murres drowned in salmon drift-nets each year in Davis Strait from 1965 to 1975, a fishery that is now restricted with few birds killed. Summer hunting takes several 10,000s of birds while annual kill tolls during winter reach 300,000 to 400,000 murres in Greenland and 500,000 to 1 million murres in Newfoundland. Overall, it seems that summer hunting at the colonies is the main cause of the observed population declines in Greenland. Spatial and temporal differences in the extent and timing of the declines together with band-recovery data show that most Greenland murres are shot in summer, and most are breeders. Most murres shot during winter are from populations outside Greenland (Arctic Canada, Svalbard), many of which are immatures.

A management plan is outlined and reviewed. To date, emphasis has been on development of legislation (migratory bird regulations) with little effort towards public education, conservation and enforcement. The nature of the Inuk culture and the hunting-based economy of Greenland makes it difficult to impose restrictions on hunting activities. Public education with ensuing changes in people's concepts and attitudes is essential to the success of any plan for the conservation and protection of murres in Greenland.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **SEABIRDS IN SVALBARD: STATUS, RECENT CHANGES AND MANAGEMENT**

Authors/Addresses: **F. MEHLUM and V. BAKKEN.** Norwegian Polar Research Institute, P.O. Box 158, 1330 Oslo Lufthavn, Norway

---

The high-arctic archipelago of Svalbard is inhabited by large seabird populations, of which several alcid species constitute the major part. The waters around the archipelago are rich in food resources for marine birds. Depending upon the location of their breeding colonies, these birds are utilizing foraging areas in both the Barents and Greenland Seas, as well as in the waters north of Svalbard.

In recent years the main negative effect on seabird populations has been recorded in the Barents Sea area. A dramatic decrease in the number of Common Murres *Uria aalge* attending the breeding colonies in the Barents Sea area occurred between the 1986 and 1987 breeding seasons. At Bjornoya, which is about the northern distribution limit of the species, a decrease of about 85-90% was recorded. That coincided with the collapse of the stock of capelin *Mallotus villosus* in the Barents Sea between 1986 and 1987. We have no information about dramatic effects on other seabird species at Bjornoya or farther north in Svalbard by this depletion of the capelin stock. Since 1987 the population of Common Murres at Bjornoya has increased; in 1989 about 40% of the 1986 level was reached. That increase coincides with a build up of the capelin stock. The Norwegian authorities are now aware of the importance of multi-species approaches to the management of fish stocks, where other fish populations as well as predators such as seabirds and marine mammals have to be considered.

Another potential threat to seabirds in the Svalbard area is the increased activities in connection with petroleum exploitation. At present, there is no indication that such activities have done any harm to the seabird populations in the area. Environmental impact assessments are made prior to the authorities' decisions concerning the opening of new areas for exploratory drilling.

The effects of other types of pollution and disturbances to seabirds in the area, as well as management plans, are outlined and discussed.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **BREEDING SEABIRDS IN THE MADEIRA ARCHIPELAGO**

Authors/Addresses: F.J.A. ZINO and M.J. BISCOITO. Rua do Dr. Pita 7, 9000 Funchal, Madeira; Museu Municipal do Funchal, 9000 Funchal, Madeira

---

Madeira is situated in the northeast Atlantic, some 500 nautical miles from Lisbon and 300 from the west coast of Africa. The archipelago has few breeding seabirds, but those that do occur are of considerable interest. *Pterodroma madeira* is an endemic and *Pterodroma feae* is a Macronesean endemic. Apart from *Puffinus puffinus* which breeds on Madeira and is not a threatened species, all the other breeding seabirds can be found on the Strict Nature Reserve of the Selvagens.

The principal threats to the breeding seabirds of the archipelago are man, rats and Herring Gulls *Larus argentatus*. The colonies of *Pterodroma madeira* and *Pterodroma feae* are further threatened by erosion and the presence of domestic herbivores.

The formation of the Selvagens Nature reserve in 1971 and the Desertas "Special Protected Area" in 1990, has done much to conserve Madeira's breeding seabirds. Pterodroma feae breeds within the Deserta protected area and, fortunately, Pterodroma madeira nests within a reserve of the Parque Natural da Madeira.

With education on conservation starting at the primary school level, the hope is that with the passage of time the human threat will diminish. Rats which had pushed *Pterodroma madeira* to near extinction are now being controlled in the breeding area by the "Freira Conservation Project". The whole archipelago badly needs a rat eradication campaign. Herring Gulls are culled when numbers get too high, but this is always a problem. Little can be done to lessen erosion by rain and wind, but reduction of current overgrazing would allow the flora to regenerate and thus help control erosion.

The archipelago is fortunate to have some very interesting and important seabird species. It now has some excellent Nature Reserves within which all the threatened birds breed. The laws to control these special areas have been drafted and approved by parliament following considerable effort. The authorities must be sure to have the courage to implement the laws, whatever pressures are brought to bear. If this can be achieved, the future for the seabirds of the Madeira Archipelago looks promising.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **SEABIRDS IN THE WEST INDIES: THREATS AND PROTECTION NEEDS**

Authors/Addresses: **J. BURGER, M. GOCHFELD, R. VAN HALEWYN, A. HAYNES-SUTTON and J. SALVIA.** Biological Sciences, Rutgers University, Piscataway, N.J. 08855, U.S.A.; Environmental and Community Medicine, UMDNJ-Robert Wood Johnson Medical School, Piscataway, N.J. 08854, U.S.A.; Zoology Museum, Plompetorengracht 9, 3512 CA Utrecht, The Netherlands; Marshall's Pen, P.O. Box 58, Mandeville, Jamaica, West Indies; U.S. Fish & Wildlife Service, Boqueron, Puerto Rico

---

The West Indies is a large and diverse Archipelago with about 22 breeding seabird species, almost half of them terns and gulls. Only three procellarids breed there, the widespread Audubon's Shearwater, and two endemic, closely-related and *Pterodroma*, the endangered Cahow of Bermuda and the threatened Black-capped Petrel of Hispaniola, and perhaps elsewhere. The Roseate Tern *Sterna dougallii* is also threatened. Several species have shown serious population declines. Increases in the density of human population and habitat change have affected the mainland islands, but the introduction of predators or grazers, and the continued exploitation of seabird populations, particularly their eggs, for food, are the major threats to their continued survival. This affects even the Black-capped Petrel in the isolated mountains of Haiti. Management involves the establishment of refuges, the patrolling of existing refuges, efforts to thwart egging, and education.

This case study examines threats to seabirds nesting on cays offshore of Culebra, Aruba, and Jamaica. Human exploitation appears to be a major factor for several species of terns, particularly Sooty and Roseate Terns. Vegetation encroachment excludes Royal and Sandwich Terns from former colonies. Preservation of successful colonies requires active wardening to prevent egging and other disturbance. For large colonies or for populations occupying several adjacent islands, it may be possible to manage one island for a limited egg harvest, early in the season. Clearing of vegetation and use of decoys has been partially successful in re-establishing tern colonies. These management plans can be generalized to other areas, providing resources are available for habitat modification and protection.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **SEABIRDS OF THE XISHA ARCHIPELAGO: STATUS AND CONSERVATION MEASURES**

Authors/Addresses: **W. HSU.** Department of Ecology, Peking Natural History Museum, 126 Tien Chiao Street 100050, Beijing, People's Republic of China

---

Xisha Archipelago (Paracel Islands) is situated between 15°47'N to 17°08'N latitude and 111°16'E to 112°55'E longitude in the South China Sea. It comprises seven islands at Xuande in the east, and eight islands at Yongle in the west. The status of birds in the Xisha Archipelago is indicated by: rare, scarce, uncommon, fairly common, common, and abundant. A total of 44 species have been recorded and evaluated, of which 39 species are common in Hainan and mainland China including five species of seabirds: Red-footed Booby *Sula sula rubripes*, Brown Booby *Sula leucogaster plotus*, Greater Frigatebird *Fregata minor minor*, Sooty Tern *Sterna fuscata nubilosa*, and Black-naped Tern *Sterna sumatrana sumatrana*. Population density and abundance levels varied between the 44 species; most are migratory.

Breeding success of the seabird species was monitored by observing events at selected study plots on Yongxing Island, Xisha Archipelago, including habitat use, adult diet and timing of egg laying. The surface area of the island is 1,596,000 m^2 of which 1,500,000 m^2 (94%) are covered by booby guano. The guano deposits are, on average, 0.14 cm thick which gives an estimated total amount of guano of about 45,000 tons. The immediate conservation needs in the Xisha Archipelago, in order of priority, are: (1) the restoration and preservation of the breeding habitat of seabirds; (2) the initiation and support of the development of long-term research programs on the key seabird species with particular emphasis on endangered endemics; and (3) the study and monitoring of major components of critical marine ecosystems associated with the Xisha Archipelago.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **SEABIRDS OF THE CHATHAM ISLANDS: STATUS, RECENT CHANGES, AND MANAGEMENT.**

Authors/Addresses: **BRIAN D. BELL and C.J.R. ROBERTSON.** 9 Ferry Street, Wellington 3, New Zealand; Science & Research Division, Department of Conservation, P.O. Box 10420, Wellington, New Zealand

---

The Chatham Islands still have a large number of breeding seabird species despite the loss of some during early human occupation. Later European settlement brought habitat destruction and mammalian predators. Today 6 species are threatened. Practical interest in seabird conservation began in the 1950's with the first island reserve, but other than reserves no other practical conservation management of species began until the 1970's.

The main threats today relate to (1) a traditional "hunting" mentality of residents; (2) a lack of habitat preservation and management; (3) predation; (4) disturbance of breeding colonies; (5) possible fisheries conflicts; (6) perceived cultural needs; (7) inter-species competition; and (8) possible climate and oceanic changes.

Actions already undertaken or proposed include: (1) habitat preservation; (2) reorganized administration; (3) species management plans; (4) monitoring; (5) fisheries bycatch observations; (6) Pitt Island conservation strategy; and (7) research.

Provided that adequate resources are made available and there is public support, most of the human-related problems may be rectified. Unknown factors - such as changes to fishing methods, weather patterns, sea temperatures, etc. - will require longer term research or monitoring so that we can understand what changes may be occurring as a result.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **CONSERVATION AND MANAGEMENT OF SEABIRD ISLANDS IN THE GULF OF CALIFORNIA - SETBACKS AND SUCCESSES**

Authors/Addresses: E. VELARDE and D.W. ANDERSON. Instituto de Biologia, University Nacional Autonoma de Mexico, A.P. 70-153, 04510 Mexico, D.F.; Department of Wildlife and Fisheries Biology, University of California, Davis, CA 95616, U.S.A.

Although the Sea of Cortez has experienced relatively minor short-term ecological declines in its natural diversity since European occupation, events there in the past decade or two have resulted in more imminent threats. A discussion of the conservation of seabirds cannot be divorced from a discussion of the overall ecological systems there; and in fact, most current threats to seabirds represent more general threats to larger ecological units. Current serious accompanying threats are represented generally by increased human development and exploitative activities such as tourism, commercial fisheries, and possibly also increased levels of various pollutants from various sources. Fortunately, a program of ecological conservation in the Sea of Cortez has been initiated. This program builds on previous work initiated by a number of individuals and agencies in both Mexico and the United States. Basically, it builds on the research and conservation efforts of first, early biological expeditions into the area, and second, an early conservation program at Isla Rasa, the first officially designated (1964) sanctuary in the Sea of Cortez.

The current program, although typically undersupported, is based on the establishment of an adequate database encompassing many natural elements of Sea of Cortez islands and offshore environments. The natural resources inventory importantly includes the seabirds. This effort also importantly involves more than just inventory work and is based heavily on basic ecological research. Other elements of the program include enforcement, education, and fund-raising activities. The ultimate goal of the program will be to develop baseline data and management plans for each specific island and associated environs in the Sea of Cortez, and then to insure their implementation.

International involvement is a strong element of this government, university, and conservation-organization partnership, and numerous Mexican and non-Mexican agencies and organizations contribute through funds, advice, and scientific research activities. Yet, in order for this program to be successful, conservation action must be successful. Therefore, a strong continuing element in preserving the seabirds in the Sea of Cortez will be to expand and enhance efforts to educate the general public, resource exploiters, and other users to the total value of natural resources of the area.

NOTES

PART III

ACTION PLANS, PROGRESS & SOLUTIONS

15. Christmas Island (Indian Ocean)

16. Seychelles (Indian Ocean)

17. Galapagos Islands

18. Cape Verde Islands (West Africa)

19. Culture & Seabird Conservation

20. Conclusions & Actions

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **THE CONSERVATION OF SEABIRDS ON CHRISTMAS ISLAND, INDIAN OCEAN**

Authors/Addresses: **B.J. REVILLE and T. STOKES.** Australian National Parks & Wildlife Service, GPO Box 636, Canberra, ACT 2600 Australia

---

Two decades ago, the unique seabird fauna of Christmas Island was endangered by large scale clearing of nesting habitat and human predation. Human predation has now been eliminated and more than sixty percent of the island, including the most important seabird nesting habitat, is protected within a National Park. The improved protection for seabirds has been achieved opportunistically rather than through implemenation of a predetermined plan; nonetheless, it illustrates several important techniques that can be employed in a successful strategy. These include: scientific research to identify the threat and conservation options, use of off-island support to counter local apathy, use of "celebrities" to pressure government, use of "banner" species to capture public attention and provide broad habitat protection, promotion of local conservation values through education and demonstration of economic value of wildlife tourism, and enshrinement of protection through legislation.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **SEABIRD CONSERVATION ON THE SEYCHELLES, INDIAN OCEAN**

Authors/Addresses: **A.W. DIAMOND.** Canadian Wildlife Service, 115 Perimeter Rd., Saskatoon, Saskatchewan, Canada S7N 0X4

The Republic of the Seychelles in the tropical western Indian Ocean comprises three island types: the unique granitic islands of the central Seychelles, coral islands and atolls (e.g., the Amirantes), and raised atolls such as Aldabra. They are remarkable for their high ratio of potential feeding area to land area (over 1,000:1) which suggests that, prior to human settlement, their seabird populations are likely to have been limited more by nesting sites than by food availability.

The islands were first settled in 1770, by Europeans; there is no evidence of earlier human influence. Of 21 seabird species recorded to have bred, 18 still do so. Gadfly-petrels (*Pterodroma* spp.) are notably absent from the avifauna, though *P. kurodai* was described from a fossil found on Aldabra. Current seabird populations are related more to degree of human disturbance (especially settlement) than to physical characteristics of islands such as area or geological type.

The major negative influences on breeding populations are: predation by introduced mammals and Barn Owls; replacement of natural habitat by coconut plantations and guano mining; and direct exploitation for food, especially of ground-nesting terns for eggs. Recent increases in exploitation of fisheries may pose new threats which remain to be evaluated.

Scientific and conservation activity, and consequent sound management recommendations, have been remarkable for the remoteness and size of these islands. Three non-government organizations have been active for more than two decades, and two have bought islands important for seabirds. Two islands are - or contain - UNESCO World Heritage Sites. Legislation is probably adequate, but compliance is probably not, especially outside statutory reserves. Effective conservation here, as anywhere, will depend primarily on education and motivation of the citizens of Seychelles.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **STATUS AND MANAGEMENT OF SEABIRDS ON THE GALAPAGOS ISLANDS, ECUADOR**

Authors/Addresses: **F. CEPEDA and J.B. CRUZ.** Servicio Parque Nacional Galapagos, Isla Santa Cruz, Galapagos, Ecuador; School of Forestry and Environmental Studies, Duke University, Durham, NC 27706, U.S.A.

With the exception of the endemic penguin (Spheniscus mendiculus), most seabird populations in the Galapagos have recovered from the population reductions and breeding failures experienced during the 1982-1983 El Nino-Southern Oscillation (ENSO). Predation by introduced mammals (principally dogs, cats, and rats) is a continued source of chick and adult mortality primarily for Flightless Cormorants (Nannopterum harrisi), the Galapagos Storm-Petrel (Oceanodroma tethys), and the endangered Dark-rumped Petrel (Pterodroma phaeopygia phaeopygia). A portion of Dark-rumped Petrel breeding habitat has been occupied by agricultural development and this has been implicated as a partial cause of their population decline. However, seabirds are also a principal tourist attraction, as well as a focus of scientific study, and this attention has increased awareness of the need for their protection.

The original Master Plan for management of the Galapagos Islands was implemented in 1976 and revised in 1984 and again in 1988. The primary objective of this plan is the protection of species unique to the Galapagos. The planning process has helped to dovetail private development objectives with the needs of the island ecosystem. Numerous investigations (in both basic and applied fields) have been carried out under the plan's guidelines.

Past seabird management has focused on monitoring population fluctuations through censuses, describing biological parameters of specific populations, and the control of predators in seabird nesting colonies. Curren management is focused on restoration of Dark-rumped Petrel breeding colonies on two islands and the control of predators on a third. Future plans call for increased protection of the petrel. Our planning recommendations include an increase in seabird monitoring, more emphasis on local environmental education programs, and better protection of seabirds by incorporating and administering the new Galapagos Marine Reserve as part of the Man and Biosphere program.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **STATUS AND CONSERVATION OF SEABIRDS IN THE CAPE VERDE ISLANDS, WEST AFRICA**

Authors/Addresses: C.J. HAZEVOET. Institute of Taxonomic Zoology, University of Amsterdam, P.O. Box 4766, 1009 AT Amsterdam, The Netherlands; and Insituto Nacional de Investigacao Agraria, C.P. 84, Praia, Republica de Cabo Verde

---

The Cape Verde Islands (Republica de Cabo Verde) are situated in the eastern Atlantic, 500-600 km west of Senegal, West Africa. There are 10 main islands (9 inhabited) and several uninhabited islets. Exploitation of seabirds is probably as old as human history in the islands. Considering the hostile climate, with droughts sometimes lasting for years, and famine wiping out half of the population, this exploitation becomes understandable. It continues until today, though more as a matter of tradition than as a nutricial necessity.

Breeding species are Pterodroma(mollis)feae, Bulweria bulwerii, Calonectris (diomedea) edwardsii, Puffinus assimilis, Pelagodroma marina, Oceanodroma castro, Phaethon aethereus, Sula leucogaster and Fregata magnificens, of which only Bulweria, Pelagodroma, and Oceanodroma are free from human predation. Main colonies are on uninhabited islets and rock-ledges on the main islands.

P. (m.) feae breeds in the mountains on some main islands, with a population of a few 100s. Its fat is used for pseudo-medicinal purposes and the eggs are taken. Each year c.5000 chicks of C.(d.) edwardsii are taken. Adults of P.assimilis are also taken.B.bulwerii, P.marina and O.castro appear to be the only species not subjected to direct human predation, but they have been exterminated by alien mammals(goats, cats, rats and mice)on Santa Luzia and Ilheu Grande. Now uninhabited, for many years a family lived on each; both have islets nearby with seabird colonies, but today not a single seabird breeds on either of them. Eggs and chicks are taken of the 3 Pelicaniformes. P.aethereus is restricted to a few small colonies, totalling not more than 150 birds. Population of S.leucogaster is c.1200 birds. The only breeding sites of F.magnificens in the eastern Atlantic are in Cape Verde, where not more than 5-6 pairs remain on 2 small islets off Boavista. It breeds in colonies of S.leucogaster, implying that it suffers from collecting of these at the same time, as collectors do not discriminate between the 2 species.

A survey in 1986, indicated that direct action was needed to prevent a further decline of the seabirds. No laws for the protection of species or their environment existed. Contact was made with the Ministry of Rural Development and Fisheries (MDRP). As a result, a Program for National Parks and Protected Areas was launched in 1988, under the auspices of the Instituto Nacional de Investigacao Agraria and ICBP(Netherlands section). Fieldwork was combined with discussions with authorities on both local and national levels. Contacts were made on all levels in the educational field. Law proposals for the protection of species and areas were written. Educational materials are being developed, lectures were given, and radio and television programs made. As a first result, relevant islets were declared "protected areas" by law this year. That prevents selling or trading seabird eggs and chicks in markets, which should discourage further collecting. Both fieldwork and the development-implementation of educational materials are planned to continue in the future.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

Case Study: **CULTURE AND SEABIRD CONSERVATION: THE NORTH SHORE OF THE GULF OF ST. LAWRENCE, CANADA**

Authors/Addresses: **K.A. BLANCHARD.** Quebec-Labrador Foundation, Atlantic Center for the Environment, 39 South Main Street, Ipswich, Massachusetts 01938, U.S.A.

Recent increases in population levels for nesting seabirds along the North Shore of the Gulf of St. Lawrence, Canada, demonstrate the efficacy of management strategies in which the socio-cultural context plays an important role in biological conservation. Populations of seabirds nesting on federal migratory bird sanctuaries declined dramatically from 1955 to 1978, including an 84 percent decline for Razorbill (*Alca torda*), a 76 percent decline for Atlantic Puffin (*Fratercula arctica*), and population decreases for Common Murre (*Uria aalge*) and Common Eider (*Somateria mollissima*). In cooperation with the Canadian Wildlife Service, a 13-year running project by a non-governmental, non-profit organization addresses the primary threat, illegal harvest, with an education program that attempts to produce behavioural changes while preserving the integrity of the local culture. Strategies involve youth instruction, leadership training, information dissemination, and support building; effective components of each are presented. Local participation is emphasized as appropriate and necessary. Evaluation by means of population monitoring and human surveys show significant increases by 1988 in the population levels of seabirds and improvements between 1981 and 1988 in the knowledge, attitudes, and hunting behaviour of residents. Probable causes for the changes include: long term implementation of strategies that respect social norms, communication channels, and the modelling of new behaviours by community leaders. The role of enforcement is discussed. The combined management effort by this non-profit organization and the federal agency reinforced local traditional values and conservation practices in a campaign that has successfully motivated the public to help conserve their seabird populations.

NOTES

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION
WORLD CONFERENCE - SEABIRD WORKSHOP
Hamilton, New Zealand, 19-20 November 1990
Seabird Specialist Group's Pre-Conference Workshop

"SEABIRDS ON ISLANDS: THREATS, CASE STUDIES, & ACTION PLANS"

SUMMARY: **SEABIRDS ON ISLANDS: Conclusions and Actions**

Authors/Addresses: J.P. CROXALL. British Antarctic Survey, High Cross, Madingley Road, Cambridge CB3 OET, England, U.K.